Any question? -> Use the BRENDA Discussion groups

PRINT

Mark a special word or phrase in this record: Mark!

Select one or more organisms in this record:
All organisms
Arabidopsis thaliana
Avena sativa
Cucumis sativus
Pisum sativum
Submit

Show additional data

- Do not include text mining results
- Include *AMENDA* (text mining) results new! (more...)
- Include *FRENDA* results new! (AMENDA + additional results, but less precise; more...)

Please login to have access to the AMENDA and FRENDA data

EC NUMBER	COMMENTARY
1.2.3.7	-

Pathway	KEGG Link
Tryptophan metabolism	00380

RECOMMENDED NAME	GeneOntology No.
indole-3-acetaldehyde oxidase	-

SYSTEMATIC NAME

indole-3-acetaldehyde:oxygen oxidoreductase

SYNONYMS	ORGANISM	COMMENTARY	LITERATURE
IAAld oxidase	-	-	-
indoleacetaldehyde oxidase	-	-	-
oxidase, indoleacetaldehyde	-	-	-

CAS REGISTRY NUMBER	COMMENTARY
66082-22-2	-

REACTION	COMMENTARY	ORGANISM	LITERATURE
2 indole-3-acetaldehyde + O2 = 2 indole-3-acetate + 2 H2O	-	-	-

REACTION TYPE	ORGANISM	COMMENTARY	LITERATURE
oxidation	-	-	-
redox reaction	-	-	-
reduction	-	-	-

ORGANISM	COMMENTARY	LITERATURE	SEQUENCE CODE	SOURCE

Arabidopsis thaliana	-	390443	-	BRENDA
Avena sativa	-	390441	-	BRENDA
Cucumis sativus	-	390439	-	BRENDA
Pisum sativum	-	390440	-	BRENDA
Zea mays	-	390442	-	BRENDA

SUBSTRATE	PRODUCT	REACTION DIAGRAM	ORGANISM	COMMENTARY/ Substrate r:=reversible ir:=irreversible	LITERATURE/ Substrate	COMMENTAR Product
acetaldehyde + O2	acetate + H2O		Avena sativa	no activity	390441	-
acetaldehyde + O2	acetate + H2O		Pisum sativum	42% of the activity with indole-3-acetaldehyde	390440	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Arabidopsis thaliana	-	390443	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Arabidopsis thaliana	enzyme form AO1 has a possible role in indole-3-acetic acid biosynthesis	390443	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Avena sativa	-	390441	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Avena sativa	terminal step in biogenesis of indole-3-acetic acid	390441	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Cucumis sativus	-	390439	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Pisum sativum	-	390440	-
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Zea mays	-	390442	-
indole-3-acetaldehyde + phenazine methosulfate	indole-3-acetate + ?		Avena sativa	-	390441	-
indole-3-aldehyde + O2	3-carboxyindole + H2O		Avena sativa	88% of the activity with indole-3-acetaldehyde	390441	-
indole-3-aldehyde + O2	3-carboxyindole + H2O		Pisum sativum	21% of the activity with indole-3-acetaldehyde	390440	-
phenylacetaldehyde + O2	phenylacetate + H2O		Avena sativa	86% of the activity with indole-3-acetaldehyde	390441	-

NATURAL	NATURAL	REACTION	ORGANISM	COMMENTARY	LITERATURE	COMMENTARY	LITERATURE	(

SUBSTRATES	PRODUCTS	DIAGRAM		SUBSTRATE	(Substrate)	PRODUCT	(Product)	(
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Arabidopsis thaliana	enzyme form AO1 has a possible role in indole-3-acetic acid biosynthesis	390443	-	-	
indole-3-acetaldehyde + O2	indole-3-acetate + H2O		Avena sativa	terminal step in biogenesis of indole-3-acetic acid	390441	-	-	

COFACTOR	ORGANISM	COMMENTARY	LITERATURE	IMAGE
Flavin	Avena sativa	no flavoprotein	390441	● 2D-image
Flavin	Cucumis sativus	metalloflavoprotein	390439	● 2D-image
Flavin	Pisum sativum	no flavoprotein	390440	● 2D-image
Heme	Cucumis sativus	contains a heme type iron component	390439	● 2D-image

METALS and IONS	ORGANISM	COMMENTARY	LITERATURE
Iron	Cucumis sativus	contains a heme type iron component	390439
MgCl2	Cucumis sativus	1 mM, activates	390439

INHIBITORS	ORGANISM	COMMENTARY	LITERATURE	IMAGE
2,4-Dichlorophenol	Cucumis sativus	-	390439	● 2D-image
2,4-Dichlorophenoxyacetic acid	Cucumis sativus	-	390439	● 2D-image
2,4-Dinitrophenol	Cucumis sativus	-	390439	● 2D-image
2-Mercaptoethanol	Avena sativa	-	390441	● 2D-image
Azide	Cucumis sativus	-	390439	● 2D-image
Benzaldehyde	Cucumis sativus	-	390439	● 2D-image
Cyanide	Avena sativa	-	390441	● 2D-image
Cyanide	Pisum sativum	-	390440	● 2D-image
Dichlorophenoxyacetic acid	Cucumis sativus	-	390439	● 2D-image
Dithionite	Avena sativa	-	390441	● 2D-image
EDTA	Cucumis sativus	-	390439	● 2D-image
EDTA	Pisum sativum	-	390440	● 2D-image
F-	Cucumis sativus	-	390439	● 2D-image
H2O2	Avena sativa	-	390441	● 2D-image
HgCl2	Cucumis	-	390439	● 2D-

	sativus			image
Hydroxylamine	Pisum sativum	-	390440	● 2D-image
Indole-3-acetic acid	Cucumis sativus	feedback inhibition in vivo	390439	● 2D-image
Iodoacetate	Avena sativa	-	390441	● 2D-image
Iodoacetate	Cucumis sativus	-	390439	● 2D-image
Menadione	Avena sativa	slight	390441	● 2D-image
More	Pisum sativum	not: p-phenanthroline, diethyldithiocarbamate, xanthogenate, semicarbazide	390440	-
N-Ethylmaleimide	Cucumis sativus	-	390439	● 2D-image
N-Ethylmaleimide	Pisum sativum	-	390440	● 2D-image
p-Hydroxymercuribenzoate	Pisum sativum	-	390440	● 2D-image
p-Nitrophenol	Cucumis sativus	-	390439	● 2D-image
Phenylacetaldehyde	Cucumis sativus	-	390439	● 2D-image

ACTIVATING COMPOUND	ORGANISM	COMMENTARY	LITERATURE	IMAGE
2-Mercaptoethanol	Cucumis sativus	activates	390439	● 2D-image

KM VALUE [mM]	KM VALUE [mM] Maximum	SUBSTRATE	ORGANISM	COMMENTARY	LITERATURE	IMAGE
0.345	-	Indole-3-acetaldehyde	Avena sativa	-	390441	● 2D-image
1.4	-	Indole-3-acetaldehyde	Pisum sativum	-	390440	● 2D-image

Ki VALUE [mM]	Ki VALUE [mM] Maximum	INHIBITOR	ORGANISM	COMMENTARY	LITERATURE	IMAGE

No entries in this field

TURNOVER NUMBER[1/s]	TURNOVER NUMBER MAXIMUM[1/s]	SUBSTRATE	ORGANISM	COMMENTARY	LITERATURE	IMAGE

No entries in this field

SPECIFIC ACTIVITY [µmol/min/mg]	SPECIFIC ACTIVITY MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
additional information	-	Pisum sativum	-	390440

pH OPTIMUM	pH MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
8	-	Pisum sativum	-	390440
6.2	-	Cucumis sativus	crude extract	390439
4.4	-	Avena sativa	-	390441

pH RANGE	pH RANGE MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
5.8	6.8	Cucumis sativus	pH 5.8: about 40% of maximal activity, pH 6.8: about 25% of maximal activity, crude extract	390439
2.9	5.5	Avena sativa	about 50% of maximal activity at pH 2.9 and at pH 5.5	390441

TEMPERATURE OPTIMUM	TEMPERATURE OPTIMUM MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
60	70	Zea mays	-	390442

TEMPERATURE RANGE	TEMPERATURE MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
50	80	Zea mays	50°C: about 50% of maximal activity, 80°C: about 70% of maximal activity	390442

SOURCE TISSUE	ORGANISM	COMMENTARY	LITERATURE	SOURCE
coleoptile	Avena sativa	-	390441	***BRENDA***
coleoptile	Zea mays	-	390442	***BRENDA***
epicotyl	Pisum sativum	-	390440	***BRENDA***
seed	Avena sativa	-	390441	***BRENDA***
seedling	Arabidopsis thaliana	activity is higher in sur1 mutant seddlings than in wild-type	390443	***BRENDA***
seedling	Cucumis sativus	-	390439	***BRENDA***
seedling	Pisum sativum	-	390440	***BRENDA***

LOCALIZATION ORGANISM COMMENTARY GeneOntology No. LITERATURE SOURCE

No entries in this field

ACCESSION CODE ENTRY NAME ORGANISM NO. OF AA MOLECULAR WEIGHT[Da] SOURCE Sequence

No entries in this field

PDB ORGANISM

No entries in this field

MOLECULAR WEIGHT MOLECULR WEIGHT MAXIMUM ORGANISM COMMENTARY LITERATURE

No entries in this field

SUBUNITS ORGANISM COMMENTARY LITERATURE

No entries in this field

POSTTRANSLATIONAL MODIFICATION ORGANISM COMMENTARY LITERATURE

No entries in this field

Crystallization/COMMENTARY ORGANISM LITERATURE

No entries in this field

pH STABILITY pH STABILITY MAXIMUM ORGANISM COMMENTARY LITERATURE

6	9	Pisum sativum	4°C, 18 h, stable	390440

TEMPERATURE STABILITY	TEMPERATURE STABILITY MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
40	-	Pisum sativum	10 min, 41% loss of activity	390440
0	30	Pisum sativum	10 min, stable	390440
additional information	-	Pisum sativum	activated by heating at 60°C, about 2 min	390440

GENERAL STABILITY	ORGANISM	LITERATURE
prolonged dialysis inactivates	Avena sativa	390441

ORGANIC SOLVENT ORGANISM COMMENTARY LITERATURE

No entries in this field

OXIDATION STABILITY ORGANISM LITERATURE

No entries in this field

STORAGE STABILITY ORGANISM LITERATURE

No entries in this field

Purification/COMMENTARY	ORGANISM	LITERATURE
partial	Pisum sativum	390440
partial	Avena sativa	390441

Cloned/COMMENTARY ORGANISM LITERATURE

No entries in this field

ENGINEERING ORGANISM COMMENTARY LITERATURE

No entries in this field

Renatured/COMMENTARY ORGANISM LITERATURE

No entries in this field

APPLICATION ORGANISM COMMENTARY LITERATURE

No entries in this field

DISEASE TITLE OF PUBLICATION LINK TO PUBMED

No entries in this field

REF.	AUTHORS	TITLE	JOURNAL	VOL.	PAGES	YEAR	ORGANISM	LINK TO PUBMED	SOURCE
390439	Bower, P.J.; Brown, H.M.; Purves, W.K.	**Cucumber Seedling Indoleacetaldehyde Oxidase.**	Plant Physiol.	61	107-110	1978	Cucumis sativus	PubMed	*BRENDA*
390440	Miyata, S.;	**Indole-3-acetyldehyde**	Physiol.	51	402-	1981	Pisum	-	

	Suzuki, Y.; Kamisaka, S.; Masuda, Y.	**oxidase of pea seedlings**	Plant.		406		sativum		***BRENDA***
390441	Rajagopal, R.	**Metabolism of indole-3-acetaldehyde. III. Some characteristics of the aldehyde oxidase of Avena coleoptiles**	Physiol. Plant.	24	272-281	1971	Avena sativa	-	***BRENDA***
390442	Koshiba, T.; Matsuyama, H.	**An in vitro system of indole-3-acetic acid formation from tryptophan in maize (Zea mays) coleoptile extracts**	Plant Physiol.	102	1319-1324	1993	Zea mays	● PubMed	***BRENDA***
390443	Seo, M.; Akaba, S.; Oritani, T.; Delarue, M.; Bellini, C.; Caboche, M.; Koshiba, T.	**Higher activity of an aldehyde oxidase in the auxin-overproducing superroot1 mutant of Arabidopsis thaliana**	Plant Physiol.	116	687-693.	1998	Arabidopsis thaliana	● PubMed	***BRENDA***

LINKS TO OTHER DATABASES (specific for EC-Number 1.2.3.7)

ExPASy

KEGG

NCBI: PubMed, Protein, Nucleotide, Structure, Genome, OMIM, Domains

IUBMB Enzyme Nomenclature

PDB database(3D structure)

PROSITE Database of protein families and domains

SYSTERS

Protein Mutant Database

Structural Classification of Proteins (SCOP)

Protein Structure Classification (CATH)

InterPro (database of protein families, domains and functional sites)

Any question? -> Use the BRENDA Discussion groups

PRINT

Mark a special word or phrase in this record: Mark!

Select one or more organisms in this record:
All organisms
Bacterium
Candida maltosa
Clostridium sporogenes
Enterobacter cloacae
Submit

Show additional data

- Do not include text mining results
- Include *AMENDA* (text mining) results[new!] (more...)
- Include *FRENDA* results[new!] (AMENDA + additional results, but less precise; more...)

Please login to have access to the AMENDA and FRENDA data

EC NUMBER	COMMENTARY
2.6.1.27	-

Pathway	KEGG Link
Tryptophan metabolism	00380

RECOMMENDED NAME	GeneOntology No.
tryptophan transaminase	-

SYSTEMATIC NAME

L-tryptophan:2-oxoglutarate aminotransferase

SYNONYMS	ORGANISM	COMMENTARY	LITERATURE
5-hydroxytryptophan-ketoglutaric transaminase	-	-	-
aminotransferase, tryptophan	-	-	-
hydroxytryptophan aminotransferase	-	-	-
L-phenylalanine-2-oxoglutarate aminotransferase	-	-	-
L-tryptophan aminotransferase	-	-	-
L-tryptophan transaminase	-	-	-
tryptophan aminotransferase	-	-	-

CAS REGISTRY NUMBER	COMMENTARY
9022-98-4	-

REACTION	COMMENTARY	ORGANISM	LITERATURE
L-tryptophan + 2-oxoglutarate = (indol-3-yl)pyruvate + L-glutamate	also acts on 5-hydroxytryptophan and, to a lesser extent, on the phenyl amino acids	-	-

REACTION TYPE	ORGANISM	COMMENTARY	LITERATURE

amino group transfer - - -

ORGANISM	COMMENTARY	LITERATURE	SEQUENCE CODE	SOURCE
Bacterium	-	639942	-	BRENDA
Candida maltosa	-	639943	-	BRENDA
Clostridium sporogenes	-	639939	-	BRENDA
Phaseolus aureus	-	639947	-	BRENDA
Rattus norvegicus	-	639944, 639946	-	BRENDA
Rhodosporidium toruloides	-	639945	-	BRENDA
Streptomyces griseus	-	441312	-	BRENDA
Sus scrofa	-	639938	-	BRENDA
Zea mays	-	639941	-	BRENDA

SUBSTRATE	PRODUCT	REACTION DIAGRAM	ORGANISM	COMMENTARY/ Substrate r:=reversible ir:=irreversible	LITERATURE/ Substrate	CC Pr
3-methyltryptophan + 2-oxoglutarate	3-(3-methylindole)-2-oxopropanoate + L-glutamate		Streptomyces griseus	can also inhibit the enzyme, stereospecific for positions 2 and 3	441312	
5-hydroxytryptophan + 2-oxoglutarate	3-(5-hydroxyindole)-2-oxopropanoate + L-glutamate		Rattus norvegicus	-	639946	
5-hydroxytryptophan + 2-oxoglutarate	3-(5-hydroxyindole)-2-oxopropanoate + L-glutamate		Sus scrofa	DL-5-hydroxytryptophan, 62% as effective as L-phenylalanine	639938	
5-hydroxytryptophan + oxaloacetate	3-(5-hydroxyindole)-2-oxopropanoate + L-aspartate		Rattus norvegicus	-	639946	
D-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate		Rhodosporidium toruloides	activity can be due to a different enzyme	639945	
D-tryptophan + pyruvate	3-indole-2-oxopropanoate + L-alanine		Zea mays	D-TAT	639941	
D-tryptophan + pyruvate	3-indole-2-oxopropanoate + L-alanine		Zea mays	no activity with oxaloacetate and 2-oxoglutarate as amino group acceptors	639941	
DL-p-fluorophenylalanine + 2-oxoglutarate	3-(4-fluorophenyl)-2-oxopropanoate + L-glutamate		Sus scrofa	41% as effective as phenylalanine	639938	
L-3,4-dihydroxyphenylalanine + 2-oxoglutarate	3-(3,4-dihydroxyphenyl)-2-oxopropanoate + L-glutamate		Sus scrofa	46% as effective as L-phenylalanine	639938	
L-aspartate + 2-oxoglutarate	oxaloacetate + L-glutamate		Rattus norvegicus	-	639946	
L-aspartate + oxaloacetate	oxaloacetate + L-aspartate		Rattus norvegicus	-	639946	
L-aspartate +	2-oxosuccinic acid + L-		Sus scrofa	10% as effective	639938	

phenylpyruvate	phenylalanine		as L-glutamate		
L-histidine + 2-oxoglutarate	3-(1H-imidazol-4-yl)-2-oxopropanoate + L-glutamate	Sus scrofa	35% as effective as L-phenylalanine	639938	
L-phenylalanine + 2-oxoglutarate	L-glutamate + phenylpyruvate	Clostridium sporogenes	-	639939	
L-phenylalanine + 2-oxoglutarate	L-glutamate + phenylpyruvate	Rattus norvegicus	-	639946	
L-phenylalanine + 2-oxoglutarate	L-glutamate + phenylpyruvate	Streptomyces griseus	-	441312	
L-phenylalanine + 2-oxoglutarate	L-glutamate + phenylpyruvate	Sus scrofa	-	639938	
L-phenylalanine + 2-oxosuccinic acid	phenylpyruvate + L-aspartate	Sus scrofa	70% as effective as 2-oxoglutarate	639938	
L-phenylalanine + oxaloacetate	phenylpyruvate + L-aspartate	Rattus norvegicus	-	639946	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Bacterium	role in microbial synthesis of auxins, influence on plant growth and development	639942	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Bacterium	specific for the substrates	639942	i.e. pyr
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Candida maltosa	-	639943	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Clostridium sporogenes	-	639939	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Clostridium sporogenes	first step in metabolic path for the conversion of L-tryptophan to indolepropionate	639939	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Phaseolus aureus	-	639947	i.e. pyr
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Rattus norvegicus	-	639944	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Rattus norvegicus	-	639946	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Rhodosporidium toruloides	-	639945	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Streptomyces griseus	-	441312	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Streptomyces griseus	initial step of biosynthetic pathway of the antibiotic indolmycin	441312	
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate	Sus scrofa	52% of the activity with L-phenylalanine	639938	
L-tryptophan + 2-	L-glutamate + 3-indole-	Zea mays	2-oxoglutarate is	639941	

oxoglutarate	2-oxopropanoate			more effective than pyruvate, oxaloacetate and glyoxylate	
L-tryptophan + glyoxylate	3-indole-2-oxopropanoate + glycine		Zea mays	isozymes L-TAT-1 and L-TAT-2	639941
L-tryptophan + oxaloacetate	3-indole-2-oxopropanoate + L-aspartate		Rattus norvegicus	-	639946
L-tryptophan + oxaloacetate	3-indole-2-oxopropanoate + L-aspartate		Zea mays	isozymes L-TAT-1 and L-TAT-2	639941
L-tyrosine + 2-oxoglutarate	L-glutamate + 3-(4-hydroxyphenyl)-2-oxopropanoate		Clostridium sporogenes	-	639939
L-tyrosine + 2-oxoglutarate	L-glutamate + 3-(4-hydroxyphenyl)-2-oxopropanoate		Rattus norvegicus	-	639946
L-tyrosine + 2-oxoglutarate	L-glutamate + 3-(4-hydroxyphenyl)-2-oxopropanoate		Streptomyces griseus	-	441312
L-tyrosine + 2-oxoglutarate	L-glutamate + 3-(4-hydroxyphenyl)-2-oxopropanoate		Sus scrofa	49% of the activity with L-phenylalanine	639938
L-tyrosine + oxaloacetate	3-(4-hydroxyphenyl)-2-oxopropanoate + L-aspartate		Rattus norvegicus	-	639946
More	?		Candida maltosa	substrate specificity	639943
More	?		Phaseolus aureus	substrate specificity	639947
More	?		Streptomyces griseus	no activity with D-tryptophan	441312
More	?		Sus scrofa	no activity with D-phenylalanine and D-glutamic acid	639938
More	?		Sus scrofa	substrate specificity	639938

NATURAL SUBSTRATES	NATURAL PRODUCTS	REACTION DIAGRAM	ORGANISM	COMMENTARY SUBSTRATE	LITERATURE (Substrate)	COMMENTARY PRODUCT	LITERATUF (Product)
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate		Clostridium sporogenes	first step in metabolic path for the conversion of L-tryptophan to indolepropionate	639939	-	-
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate		Streptomyces griseus	initial step of biosynthetic pathway of the antibiotic indolmycin	441312	-	-
L-tryptophan + 2-oxoglutarate	L-glutamate + 3-indole-2-oxopropanoate		Bacterium	role in microbial synthesis of auxins,	639942	-	-

influence on plant growth and development

COFACTOR	ORGANISM	COMMENTARY	LITERATURE	IMAGE
Pyridoxal 5'-phosphate	Bacterium	-	639942	2D-image
Pyridoxal 5'-phosphate	Clostridium sporogenes	Km: 0.00218 mM; required for full activation	639939	2D-image
Pyridoxal 5'-phosphate	Streptomyces griseus	-	441312	2D-image
Pyridoxal 5'-phosphate	Sus scrofa	pyridoxamine 5'-phosphate and pyridoxal phosphate are effective in partially restoring the apoenzyme activity and in stimulating the holoenzyme pyridoxamine phosphate, pyridoxamine phosphate is somewhat more effective than pyridoxal phosphate	639938	2D-image
Pyridoxal 5'-phosphate	Zea mays	required for full activation	639941	2D-image
Pyridoxamine 5'-phosphate	Clostridium sporogenes	activates	639939	2D-image
Pyridoxamine 5'-phosphate	Sus scrofa	pyridoxamine 5'-phosphate and pyridoxal phosphate are effective in partially restoring the apoenzyme activity and in stimulating the holoenzyme pyridoxamine phosphate, pyridoxamine phosphate is somewhat more effective than pyridoxal phosphate	639938	2D-image

METALS and IONS	ORGANISM	COMMENTARY	LITERATURE

No entries in this field

INHIBITORS	ORGANISM	COMMENTARY	LITERATURE	IMAGE
3-Methyltryptophan	Streptomyces griseus	can also act as substrate	441312	2D-image
4-Fluorophenylalanine	Sus scrofa	32 mM, 50% inhibition	639938	2D-image
L-Glutamate	Rattus norvegicus	inhibits activity towards tryptophan	639946	2D-image
More	Rattus norvegicus	-	639944	-
More	Sus scrofa	reduced activity in cacodylate, Tris and borate buffers; not affected by metal chelators and high concentration of ammonium sulfate	639938	-
p-Chloromercuribenzoate	Streptomyces griseus	no inhibition	441312	2D-image
p-Chloromercuribenzoate	Sus scrofa	reduced by preincubation with L-phenylalanine and pyridoxal phosphate and reversed by a subsequent preincubation with 2-mercaptoethanol	639938	2D-image

ACTIVATING COMPOUND	ORGANISM	COMMENTARY	LITERATURE	IMAGE
2-Mercaptoethanol	Sus scrofa	preincubation, activates	639938	2D-image
More	Clostridium sporogenes	high salt concentrations activate; no activation by: pyridoxine, pyridoxal, pyridoxamine	639939	-
More	Rhodosporidium	-	639945	-

	toruloides			
More	Sus scrofa	no activation by: pyridoxine, pyridoxal, pyridoxamine	639938	-
Phosphate	Sus scrofa	maximal activity in presence of phosphate buffer, in absence reaction proceeds at 50% of that observed in optimal phosphate concentration	639938	● 2D-image

KM VALUE [mM]	KM VALUE [mM] Maximum	SUBSTRATE	ORGANISM	COMMENTARY	LITERATURE	IMAGE
0.158	-	2-Oxoglutarate	Clostridium sporogenes	cosubstrate phenylalanine , pH 8.4, 22°C approximately	639939	● 2D-image
0.74	-	2-Oxoglutarate	Sus scrofa	cosubstrate phenylalanine, pH 8.0, 37°C	639938	● 2D-image
7	-	4-Fluorophenylalanine	Sus scrofa	pH 8.0, 37°C	639938	● 2D-image
6	-	L-3,4-Dihydroxyphenylalanine	Sus scrofa	pH 8.0, 37°C	639938	● 2D-image
50	-	L-Phenylalanine	Sus scrofa	pH 8.0, 37°C	639938	● 2D-image
1.22	-	L-Tryptophan	Bacterium	pH 8.0, 40°C	639942	● 2D-image
2.68	-	L-Tryptophan	Clostridium sporogenes	cosubstrate tryptophan, pH 8.4, 22°C approximately	639939	● 2D-image
15	-	L-Tryptophan	Sus scrofa	pH 8.0, 37°C	639938	● 2D-image
3.8	-	L-Tyrosine	Sus scrofa	pH 8.0, 37°C	639938	● 2D-image
additional information	-	More	Candida maltosa	-	639943	-
additional information	-	More	Phaseolus aureus	-	639947	-
additional information	-	More	Rattus norvegicus	-	639944	-

Ki VALUE [mM]	Ki VALUE [mM] Maximum	INHIBITOR	ORGANISM	COMMENTARY	LITERATURE	IMAGE

No entries in this field

TURNOVER NUMBER[1/s]	TURNOVER NUMBER MAXIMUM[1/s]	SUBSTRATE	ORGANISM	COMMENTARY	LITERATURE	IMAGE

No entries in this field

SPECIFIC ACTIVITY [µmol/min/mg]	SPECIFIC ACTIVITY MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
23.6	-	Clostridium sporogenes	partially purified enzyme	639939
7.04	-	Sus scrofa	reverse reaction, purified enzyme	639938

pH OPTIMUM	pH MAXIMUM	ORGANISM	COMMENTARY	LITERATURE

8.4	-	Clostridium sporogenes	-	639939
8	-	Bacterium	-	639942
8	-	Rattus norvegicus	-	639946
8	-	Sus scrofa	assay at	639938
8	9	Sus scrofa	phenylalanine	639938
8	9	Zea mays	both L-TAT isozymes, D-TAT	639941

pH RANGE	pH RANGE MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
7	9.3	Clostridium sporogenes	pH 7.0: about 55% of activity maximum, pH 9.3: about 60% of activity maximum	639939

TEMPERATURE OPTIMUM	TEMPERATURE OPTIMUM MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
50	60	Zea mays	both L-TAT isozymes	639941
40	-	Bacterium	-	639942
37	-	Sus scrofa	assay at	639938
30	-	Zea mays	D-TAT	639941
22	-	Clostridium sporogenes	assay at	639939

TEMPERATURE RANGE	TEMPERATURE MAXIMUM	ORGANISM	COMMENTARY	LITERATURE

No entries in this field

SOURCE TISSUE	ORGANISM	COMMENTARY	LITERATURE	SOURCE
brain	Rattus norvegicus	-	639946	BRENDA
brain	Sus scrofa	cortex	639938	BRENDA
brain cortex	Sus scrofa	-	639938	BRENDA
coleoptile	Zea mays	-	639941	BRENDA
leaf	Phaseolus aureus	-	639947	BRENDA
liver	Rattus norvegicus	-	639944	BRENDA
root	Phaseolus aureus	-	639947	BRENDA
seedling	Phaseolus aureus	-	639947	BRENDA

LOCALIZATION	ORGANISM	COMMENTARY	GeneOntology No.	LITERATURE	SOURCE
cytosol	Phaseolus aureus	-	-	639947	BRENDA
cytosol	Rattus norvegicus	-	-	639944	BRENDA
cytosol	Rattus norvegicus	also synaptosomal cytosol	-	639946	BRENDA
more	Rattus norvegicus	no activity in mitochondria	-	639946	BRENDA
particle-bound	Rhodosporidium toruloides	no sucess in solubilization of the enzyme from the particles	-	639945	BRENDA
synaptosome	Rattus norvegicus	cytosol	-	639946	BRENDA

ACCESSION CODE	ENTRY NAME	ORGANISM	NO. OF AA	MOLECULAR WEIGHT[Da]	SOURCE	Sequence

No entries in this field

PDB ORGANISM

No entries in this field

MOLECULAR WEIGHT	MOLECULR WEIGHT MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
97000	-	Clostridium sporogenes	sucrose density gradient centrifugation	639939
80000	-	Zea mays	isozyme form L-TAT-1, gel filtration	639941
55000	-	Rattus norvegicus	-	639946
55000	-	Zea mays	D-TAT, gel filtration	639941
45000	-	Zea mays	isozyme form L-TAT-2, gel filtration	639941

SUBUNITS ORGANISM COMMENTARY LITERATURE

No entries in this field

POSTTRANSLATIONAL MODIFICATION ORGANISM COMMENTARY LITERATURE

No entries in this field

Crystallization/COMMENTARY ORGANISM LITERATURE

No entries in this field

pH STABILITY pH STABILITY MAXIMUM ORGANISM COMMENTARY LITERATURE

No entries in this field

TEMPERATURE STABILITY	TEMPERATURE STABILITY MAXIMUM	ORGANISM	COMMENTARY	LITERATURE
0	10	Streptomyces griseus	12 h, complete loss of activity	441312

GENERAL STABILITY	ORGANISM	LITERATURE
low buffer concentrations: loss of activity	Clostridium sporogenes	639939
unstable upon freezing and thawing	Clostridium sporogenes	639939

ORGANIC SOLVENT ORGANISM COMMENTARY LITERATURE

No entries in this field

OXIDATION STABILITY ORGANISM LITERATURE

No entries in this field

STORAGE STABILITY	ORGANISM	LITERATURE
-20°C, 0.40 M potassium phosphate buffer, pH 8.0, highly purified enzyme stable for at least 2 weeks	Sus scrofa	639938
-20°C, 100fold purified enzyme, 0.4 M potassium phosphate, pH 8.0, stable for at least 9 months	Sus scrofa	639938
-20°C, best stored by freezing the crude cell-free extract with 10% glycerol or by	Streptomyces	441312

freezing the 45-60% ammonium sulfate precipitate in a phosphate buffer solution	griseus	
0°C, partially purified enzyme, stable for at least 48 h	Clostridium sporogenes	639939

Purification/COMMENTARY	ORGANISM	LITERATURE
-	Rattus norvegicus	639946
28fold	Phaseolus aureus	639947
35fold	Bacterium	639942
about 900fold	Sus scrofa	639938
partial, 2 isozymes: L-TAT-1 and L-TAT-2, 1 D-tryptophan aminotransferase D-TAT	Zea mays	639941
partial, 200fold	Clostridium sporogenes	639939
partial, 3fold	Streptomyces griseus	441312

Cloned/COMMENTARY ORGANISM LITERATURE

No entries in this field

ENGINEERING ORGANISM COMMENTARY LITERATURE

No entries in this field

Renatured/COMMENTARY ORGANISM LITERATURE

No entries in this field

APPLICATION ORGANISM COMMENTARY LITERATURE

No entries in this field

DISEASE TITLE OF PUBLICATION LINK TO PUBMED

No entries in this field

REF.	AUTHORS	TITLE	JOURNAL	VOL.	PAGES	YEAR	ORGANISM	LINK TO PUBMED	SOURC
441312	Speedie, M.K.; Hornemann, U.; Floss, H.G.	**Isolation and characterization of tryptophan transaminase and indolepyruvate C-methyltransferase. Enzymes involved in indolmycin biosynthesis in Streptomyces griseus**	J. Biol. Chem.	250	7819-7825	1975	Streptomyces griseus	● PubMed	BREND
639938	George, H.; Gabay, S.	**Brain aromatic aminotransferase. I. Purification and some properties of pig brain L-phenylalanine-2-oxoglutarate aminotransferase**	Biochim. Biophys. Acta	167	555-566	1968	Sus scrofa	● PubMed	BREND
639939	O'Neil, S.R.;	**Tryptophan**	Arch. Biochem.	127	361-	1968	Clostridium	● PubMed	

	DeMoss, R.D.	**transaminase from Clostridium sporogenes**	Biophys.		369		sporogenes		BREND
639941	Koshiba, T.; Mito, N.; Miyakado, M.	**L- And D-tryptophan aminotransferases from maize coleoptiles**	J. Plant Res.	106	25-29	1993	Zea mays	-	BREND
639942	Frankenberger, W.T.Jr.; Poth, M.	**L-Tryptophan transaminase of a bacterium isolated from the rhizosphere of Festuca octoflora (Graminae)**	Soil Biol. Biochem.	20	299-304	1988	Bacterium	-	BREND
639943	Bode, R.; Birnbaum, D.	**Characterization of three tryptophan aminotransferases from Candida maltosa**	Prog. Tryptophan Serotonin Res. Proc.-Meet. Int. Study Group Tryptophan Res. ISTRY (Schlossberger, H.G., ed.) 4th, Meeting Date1983, de Gruyter	Berlin	769-772	1984	Candida maltosa	-	BREND
639944	Stanley, J.; Nicholas, A.; Thompson, I.; Pogson, C.	**Tryptophan aminotransferase activity in rat liver**	Prog. Tryptophan Serotonin Res., Proc.-Meet. Int. Study Group Tryptophan Res. ISTRY (Schlossberger, H.G., ed.) 4th, Meeting Date1983, de Gruyter	Berlin	665-668	1984	Rattus norvegicus	-	BREND
639945	Lesch, T.; Bode, R.; Birnbaum, D.	**Transamination of L- and D-tryptophan by a soluble and a particle-bound enzyme fraction of Rhodosporidium toruloides**	Biochem. Physiol. Pflanz.	174	546-554	1979	Rhodosporidium toruloides	-	BREND
639946	Minatogawa, Y.; Noguchi, T.; Kido, R.	**Purification, characterization and identification of tryptophan aminotransferase from rat brain.**	J. Neurochem.	27	1097-1101	1976	Rattus norvegicus	PubMed	BREND
639947	Truelsen, T.A.	**Indole-3-pyruvic acid as an intermediate in the conversion of tryptophan to indole-3-acetic acid. I. Characterization of tryptophan transaminase**	Physiol. Plant.	26	289-295	1972	Phaseolus aureus	-	BREND

from mung bean
seedlings

LINKS TO OTHER DATABASES (specific for EC-Number 2.6.1.27)

ExPASy

KEGG

NCBI: PubMed, Protein, Nucleotide, Structure, Genome, OMIM, Domains

IUBMB Enzyme Nomenclature

PDB database(3D structure)

PROSITE Database of protein families and domains

SYSTERS

Protein Mutant Database

Structural Classification of Proteins (SCOP)

Protein Structure Classification (CATH)

InterPro (database of protein families, domains and functional sites)